Tension-Type Headache (TTH) in terms of functioning temporomandibular joints among paramedic students

(Napięciowe bóle głowy <Tension-Type Headache – TTH> w aspekcie funkcjonowania stawów skroniowo-żuchwowych wśród studentów kierunków medycznych)

Dominika Kurda [1,A,D], Małgorzata Kulesa-Mrowiecka [1,2,E,F], Grzegorz Frankowski [1,B,C]

Abstract – Introduction. One of the most common neurological symptoms occurring both among adults and children are headaches. Problems associated with frequent and severe headaches may cause limitations in daily activities of life. A popular problem in the general population are also pain forms of Temporomandibular Disorders (TMDs). Commonness of both of these phenomena may be a premise of interdependence in their occurrence. Significantly predisposing factors are better defined in homogeneous groups, such as students of medical faculties. TTH are classified as primary pain TTH. Headaches connected with disorders of stomatognathic system are classified as secondary in ICHD -3.

The aim of the study. The aim of the study is to detect the relationship between TTH headaches, and the occurrence of pain forms of temporomandibular joint disorders.

Materials and methods. A group of 208 medical students studying from Polish cities were examined. After undergoing the exclusion criteria: migraine headaches, psychosocial disorders, craniocerebral injuries and others, the research group consisted of 142 respondents, of whom 85.9% were women (n = 122), while men accounted for 14.1% of respondents (n = 20). The study was carried out using a questionnaire created for the needs of the study. It concerned headaches and disorders occurring in temporomandibular joints.

Results. In the analyzed group, 10.8% of students suffering from TTH suffer from temporomandibular joint pain, while other ailments from the temporomandibular joints concern 43.2% of students with TTH. In the study group, no significant relationship was found between the occurrence of TTH and the occurrence of pain in the temporomandibular joints.

Conclusions. In the study group of students the occurrence of tension headaches is not associated with the occurrence of pain and other symptoms in the temporo-mandibular joints. Reasonable will be also evaluate the clinical trial on a larger group, including secondary stomatognathic headaches.

Key words – temporomandibular joints, tension type headache, medical students.

Streszczenie – Wprowadzenie. Jednymi z najczęstszych dolegliwości neurologicznych są bóle głowy. Problemy związane z częstymi i silnymi bólami głowy mogą powodować ograniczenia w czynnościach życia codziennego. Popularnym problemem w populacji ogólnej są również postacie bólowe dysfunkcji stawów skroniowo-żuchwowych (Temporomandibular disorders – TMDs) oraz napięciowe bóle głowy (Tension-Type Headaches – TTHs). Powszechność obu tych zjawisk może stanowić przesłankę o współzależności w ich występowania. Znaczenie czynników predysponujących lepiej definiowane jest w grupach homogenicznych, takich jak studenci kierunków medycznych. Według klasyfikacji ICHD-3 napięciowe bóle głowy są traktowane jako pierwotny ból typu napięciowego, natomiast bóle głowy związane z Dysfunkcjami Układu Czynnościowego Narządu Żucia (DUCNŻ) jako bóle głowy wtórne pochodzenia stomatognatycznego.

Cel badań. Celem pracy było wykrycie zależności między pojawiającymi się bólami głowy, a występowaniem dysfunkcji stawów skroniowo-żuchwowych.

Materiał i metodyka. Przeprowadzono ankietę internetową wśród 208 studentów kierunków medycznych studiujących w polskich miastach. Po uwzględnieniu kryteriów wyłączenia, m.in. migrenowych bólów głowy, zaburzeń psychospołecznych, urazów czaszkowo-mózgowych i innych, grupę badaną stanowiło 142 ankietowanych, z których 85,9% stanowiły kobiety (n=122), natomiast mężczyźni stanowili 14,1% badanych (n=20). Badanie przeprowadzono za pomocą kwestionariusza ankiety, stworzonego na potrzeby badania z uwzględnieniem klasyfikacji ICHD-3. Kwestionariusz dotyczył bólów głowy oraz dolegliwości występujących w obrębie stawów skroniowo-żuchwowych.

Wyniki. W analizowanej grupie 10,8% studentów cierpiących na TTH odczuwa bóle stawów skroniowo-żuchwowych, natomiast inne dolegliwości (trzeszczenia, krepitacje, zablokowania) ze strony stawów skroniowo-żuchwowych dotyczą 43,2% studentów z TTH. W badanej grupie nie wykryto istotnej zależności pomiędzy występowaniem TTH, a występowaniem bólu w stawach skroniowo-żuchwowych.
Wnioski. W przebadanej grupie studentów występowanie napięciowych bólów głowy nie jest związane z występowaniem bólu oraz innych dolegliwości w stawach skroniowo-żuchwowych. Zasadnym będzie ocena również badania klinicznego na większej grupie z uwzględnieniem wtórnych bólów głowy pochodzenia stomatognatycznego.

Słowa kluczowe – stawy skroniowo-żuchwowe, napięciowe bóle głowy, studenci kierunków medycznych.

Author Affiliations:

1. Faculty of Health Sciences, Collegium Medicum, Jagiellonian University, Poland
2. Physiotherapy and Stomatognathic Clinic dr Małgorzata Kulesa-Mrowiecka, Poland

Authors' contributions to the article:

A. The idea and the planning of the study
B. Gathering and listing data
C. The data analysis and interpretation
D. Writing the article
E. Critical review of the article
F. Final approval of the article

Correspondence to:

Małgorzata Kulesa-Mrowiecka, Faculty of Health Sciences, Collegium Medicum, Jagiellonian University, Piotra Michałowskiego 12 Str., PL- 31-126 Kraków,Poland, e-mail: m.kulesa-mrowiecka @uj.edu.pl

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I. INTRODUCTION

Headaches are increasingly serious problem faced by society [1]. They are one of the most common neurological ailments, which adversely affect the social and economic spheres. Depending on the prevalence of headaches, they may be linked with a significant disability degree and being on expensive medications, as a result of which, the quality of life is lowered by partial or total elimination from the social and the working life [2]. Headache may be a primary disorder, as well as a secondary symptom, co-occuring in the case of e.g. infection or cancer. The best-tested primary headache is migraine [3]. However, the most common and costly is self-inflicted TTH. In the last two decades TTH has been more widely studied and the search for pathophysiology and epidemiology of these ailments has been initiated [4,5]. Tension headaches constitute 78% of primary pains. Their prevalence in the general population fluctuates from 30% to 78% [2,4]. Initially, the disease was thought to be linked with psychogenic disorders, later neurobiological disorders were focused on and their original character was indicated [5].
Nowadays, in the process of TTH formation, the importance of increased muscle tension and encephalous circulation disorder are emphasised [4]. In the new ICHD-3 classification headaches have been classified to muscle tension of the UCNZ as secondary headaches of stomatognathic origin (item 11.7 Headache attributed to temporomandibular disorder – TMD) [2].

The health problem that happens often in the population are temporo-mondibular joint dysfunctions (Temporomandibular disorders – TMDs). This concept defines the afflictions connected with the disorders masticatory muscle function, temporomandibular joint TMJ and other integrated structures. Such a disorders are experienced with the pain, mostly placed in the chewing muscles and the …. Area. Other symptoms of the TMJ disorders are the parafunctions such as cracklings, clickings in the joints, tiredness during biting, difficulties with opening the mouth (the standard is to open the mouth in width of 3 palm fingers), as well as the problem with mandibular offset / in the lateral displacements of the mandible. Guidelines of the American Academy of Orofacial Pain – AAOP indicate that in the population of adults 40% to 75% have minimum 1 symptom of joint dysfunction, whereas 33%of the population occurs minimum 1 symptom of TDM. The temporomandibular joint – TMJ should not be considered as isolated biomechanical entity because the cooperation of two joints is compressed and all the changes appearing in one joint, appears in the other as well. It translates into deepen pain and emerging imbalances.

TMD as well as TTH may be burdensome, resulting in restrictions in the everyday life and increasing disorders. The patients having such a disorders demand the care from a specialist team, composed of a dentist, neurologist, rheumatologist, ENT specialist and physiotherapist, and detailed diagnostics. Prevalence of occurrence, similar

location and overlapping symptoms are a prerequisite for interdependence in their occurrence, prompting authors to undertake own research.
The purpose of the research was the assessment of the frequency of headaches taking into account selected features, as well as establishing the relationship between emerging tension headaches and the occurrence of temporomandibular joint dysfunctions, in particular pain and other parafunctions.

II. MATERIAL AND METHODS

Material

The research was conducted among 208 students of the majors in the field of medical studies and health studies, studying at 10 universities in various Polish cities, e.g. Wrocław, Kraków, Warsaw, Łódź, etc. In the research group there were 177 (88,5%) women and 31 (11,5%) men. The average age of the studied group was 22.6 ± 3.4, while the average age of women: 22.7 ± 3.6, while men: 22.1 ± 1.4. Participation in the research was random, voluntary and anonymous. The study was carried out from March 2018 to May 2018.

Methods

In the research there was used a method of the indirect (online) diagnostic survey method, the questionnaire technique was used, and as a research tool - the author's questionnaire. The questionnaire consisted of a sheet (questions about the demographic characteristics of respondents: gender, age, field of study and year of study) an the questions regarding many different aspects of the headaches frequency of their occurrence, duration, intensity, here 10-point VAS scale, occurrence of neck and shoulder pains and tensions of sub-distant areas were used. The last part of the questionnaire concerned irregularities related to temporomandibular joints, mainly the occurrence of pain and parafunctions: crackling, leaping, feeling of "blocking the joint", fatigue during biting, difficulty in opening the mouth and difficulties in lateral movements of the mandible.

III. RESULTS

Students qualified for further research were divided into two groups. The qualification consisted in analysing the answers in terms of inclusion criteria compliant with the International Classification of Headache Disorders (ICHD-3) [2].
Group I - students from TTH, consisting of people in whom the pain: lasted from 30 minutes to several hours, was characterized by at least two symptoms with the following (bilateral location, insistent and „tightening"; head, mild or moderate intensity, which did not increase during physical activity), and also occurred without nausea, vomiting and no more than one symptom - photophobia or hypersensitivity to sounds.
Group II - students with headaches of other types or without headaches. The characteristics of both groups are presented in Figure 1.

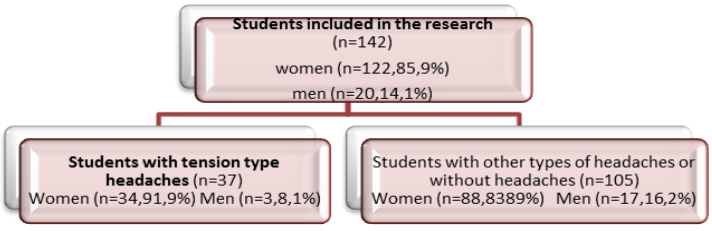

Figure 1. Scheme showing the distribution of students with TTH and headaches classified as other or no headaches

In the group of people with TTH pain in temporomandibular joints occurred in 10. 8% of respondents (n=4). Other paraphernalia appeared in 43. 2% of students (n=16) Figure
2.

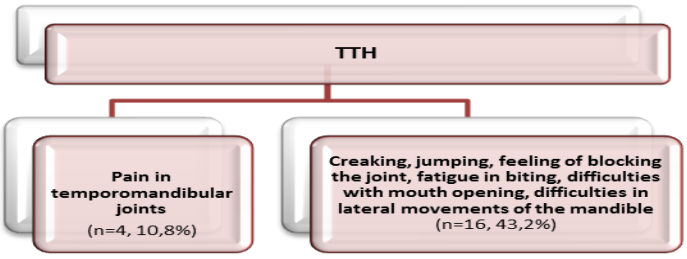

Figure 2. Characteristics of ailments in TMJ in the TTH group

Characteristics of various types of ailments occurring in the tested/studied group of students

The incidence of headaches is shown in Table 1.

Table 1. Frequency of headache

Tested group	Frequency: the number of/%					
	Never	Once every few months	Several times a month (about 2-3 times)	Several times a week (about 2-3 times)	Everyday	**Total**
Without TTH	3/2,86%	29/27,62%	49/46,67%	21/20,0%	3/2,86%	105/100%
TTH	0/0,0%	11/29,73%	20/54,05%	5/13,51%	1/2,70%	37/100%
Total	3/2,11%	40/28,17%	69/48,59%	26/18,31%	4/2,82%	142/100%

In the studied group of students headaches most often occurred *several times a month (about 2-3 times).* Such a periodicity of ailments was found in 48. 59% of respondents. *Once every few months* pain occurred in 28. 17%. However, TTH did not exacerbate statistically analyzed pain compared to people without TTH.

The duration of pain among the studied students is presented in Table 2.

Table 2. Duration of headache pain

Tested group	Frequency: the number of/%						
	Constant chronic pain	1-3 days	1-5 hours	21-60 min	11-20 min	1-10 min	**Total**
Without TTH	2/1,90%	2/1,90%	389/36,19%	29/27,62%	19/18,10%	15/14,29%	105/100%
TTH	0/0,0%	5/13,51%	21/56,76%	11/29,73%	0/0,0%	0/0,0%	37/100%
Total	2/1,41%	7/4,93%	59/41,55%	40/28,17%	19/13,38%	15/10,56%	142/100%

Most often (41.55% of the respondents) headaches occurred with a frequency of 1-5 hours, in the further 28.17% they occurred with a frequency of 21-60 minutes. TTH did not statistically affect the occurrence of a specific frequency of headaches compared to people without TTH.

The incidence of neck and shoulder pain is shown in Table 3.

Table 3. The occurrence of neck and shoulder

Tested group	Frequency: the number of/%					
	Never	Rarely	Sometimes	Often	Always	**Total**
Without TTH	17/16,19%	23/21,9%	36/34,29%	24/22,86%	5/4,76%	105/100%
TTH	7/18,92%	5/13,51%	10/27,03%	12/32,43%	3/8,11%	37/100%
Total	24/16,90%	28/19,72%	46/32,39%	39/27,46%	8/5,63%	142/100%

Pain in the neck and shoulders occured *sometimes* in 32,39% examinated subjects, and *often* in 27,46%. Statistically, TTH did not significantly excacerbate the pain in the neck and shoulders in comparison to subjects without TTH.

Table 4. The occurence of tension and muscle weakness of the underoccipital area

Tested group	Frequency: the number of/%					
	Never	Rarely	Sometimes	Often	Always	**total**
Without TTH	23/21,9%	27/25,71%	29/27,62%	21/20,0%	5/4,76%	105/100%
TTH	7/18,92%	8/21,62%	8/21,62%	9/24,32%	5/13,51%	37/100%
Total	30/21,13%	35/24,65%	37/26,06%	30/21,13%	10/7,04%	142/100%

Tension and muscle weakness of the underoccipal area occured *often* in 26,06% examinated subjects, and *seldom* in the rest 24,65%. Statistically, TTH did not excacerbate significantly the tension and muscle weakness of the underoccipal area in comparison to subjects without TTH.

IV. DISCUSSION

The prevalence of headaches in general population constitites the increasingly major issue. These ailments contribute to lowering of life qualities. Patophysiology of the ailments is more often connected to intensified socio-economic development of our working and living habitat. [2,10,12]

Also disfunctions of temple-jaw joints occur increasingly more often. The worsening pain and other ailments may induce restrictions in functioning in the daily life.[4] The patients with ailments in temple -jaw joints seldom associate them to ailments in other parts of their body, therefore the profound and systematic diagnosis, which enables the cognition of the disorders' etiology is so crucial. [7,13] Our observations confirm the reports of Benoliel et al. Accoring to the abovementioned authors there is a lack of characteristical dependence between the occurene of tension-type headaches, pain and other parafunctions. The other authors, i.e. Loster *et al*, Anderson *et al*, Kleinrok *et al*, are of a distinctively different opinion. From their establishments, there occures a statistical significant dependence between headaches and tempe-jaw joints' disfunction. [14-17]

One of the important factors which predisposite to the occurence of tension-type headaches is stress [7,11]. It's exacerbation faciliates the increasing tension of muscles in the area of head and shoulders, the intensified activity of muscles, the lockjaw and bruxism [7,8]. Heszen-Niejodek pinpoints that the occurence of headaches is a negative effect of lack of the ability to managing with difficult situations [17]. The phenomenon may be intensified by the process of developing aneamia of the brain matter caused by the stress reactions. [18,19]

V. CONCLUSION

In private examination the occurence of tension-type headaches is not connected to the occurence of the pain and other parafunctions of the temple-jaw joints.

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